PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Artcle 36 and Rule 70)

Applicant's or agent's file reference PCT3017KR	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. **PCT/KR2003/002243**	International filing date *(day/month/year)* **23 OCTOBER 2003 (23.10.2003)**	Priority date *(day/month/year)* 24 OCTOBER 2002 (24.10.2002)

International Patent Classification (IPC) or national classification and IPC

IPC7 C09D 5/16

Applicant

SK CHEMICALS CO., LTD. et al

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

   ☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of _____ sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demamd	Date of completion of this report
19 MARCH 2004 (19.03.2004)	15 FEBRUARY 2005 (15.02.2005)
Name and mailing address of the IPEA/KR Korean Intellectual Property Office 920 Dunsan-dong, Seo-gu, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140	Authorized officer LEE, Sun Kuk Telephone No. 82-42-481-5587

Form PCT/IPEA/409 (cover sheet) (July 1998)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International aplication No.
PCT/KR2003/002243

I. Basis of the report

1. With regard to the elements of the international application:*

☒ the international application as originally filed

☒ the description:
pages 1-17 , as originally filed
pages _____ , filed with the demand
pages _____, filed with the letter of _____

☒ the claims:
pages 18-20 , as originally filed
pages _____ , as amended (together with any statment) under Article 19
pages _____ , filed with the demand
pages _____, filed with the letter of _____

☒ the drawings:
pages NONE , as originally filed
pages _____ , filed with the demand
pages _____, filed with the letter of _____

☒ the sequence listing part of the description:
pages NONE , as originally filed
pages _____ , filed with the demand
pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language _____which is

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

☐ the language of publication of the international application(under Rule 48.3(b)).

☐ the language of the translation furnished for the purposes of international preliminary examination(under Rules 55.2 and/or 55.3).

3. With regard to any **nucleotide** and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained inthe international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form

☐ The statement that the subsequently furnished written sequence listing does not go beyond the disc losure in the international applicationas as filed has been furinshed.

☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☐ the claims, Nos. _____

☐ the drawings, sheets _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box(Rule 70.2(c)).**

* *Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed." and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).*

** *Any replacement sheet containing such amendments must be referred to under item I and annexed to this report.*

INTERNATIONAL PRELIMINARY EXAMINATION

International aplication No.
PCT/KR2003/002243

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-10	YES
	Claims		NO
Inventive step (IS)	Claims	1-10	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-10	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

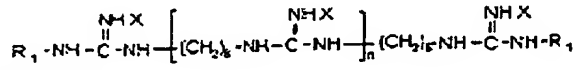
1. Reference is made to the following documents:

D1: KR 2000-62680 A
D2: KR 2001-64950 A

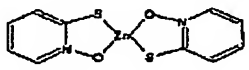
2. D1(KR 2000-62680 A) and D2(KR 2001-64950 A) are regarded as being the closest prior art to the present invention. D2(KR 2001-64950 A) was not cited in the ISR.

3. The present invention relates to an antifouling paint composition which does not include an organic tin compound causing contamination of seawater, but includes polyhexamethyleneguanidine salt and zinc pyrithione and/or cuprous oxide(Cu2O). More specifically, the antifouling paint composition comprises a resin of 5 to 20 wt%; a solvent of 3 to 30 wt%; polyhexamethyleneguanidine salt of the following chemical formula 1 of 0.05 to 20 wt%; a pigment of 1 to 50 wt%; and cuprous oxide of 22 to 75 wt% and/or zinc pyrithione of the following chemical formula 2 of 0.05 to 20 wt%.

[Chemical formula 1]



[Chemical formula 2]



In chemical formula 1, at least one of X is an inorganic acid salt or an organic acid salt; R1 is an alkyl group, a phenyl group, a benzyl group, a phenethyl group, a naphthyl group or hydrogen, and n is an integer of 1 or more.

(Continued on Supplemental Box.)

Supplemental Box
(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of:

Box No. V

4. D1 discloses an antifouling paint composition to be applied to ship hulls, constructions in water or on water, and materials for fishery. More specifically, the antifouling paint composition exhibits antifouling ability over a long period of time by enabling to control a dissolving rate of the coated film without deterioration of paint properties and properties of the coated film after a long time storage.

The composition contains a resin, a copper-type antifouling agent, and a chelating agent. The above mentioned resin can be employed without limitation, and especially, it is preferred to employ at least one resin selected from acrylic resins, polyester resins and silyl resins.

Also, the above mentioned copper-type antifouling agent is cuprous oxide, copper thiocyanate, copper powder, basic copper chloride, basic copper sulfate, basic copper carbonate, copper silicate, copper hydroxide and the like, and especially, cuprous oxide is preferred.

Moreover, said copper-type antifouling agent may be used together with the agent(s) optionally selected from the other hitherto known antifouling agent(s), for example, nitrogen-containing sulfur-type antifouling agents such as zinc ethylenebis(dithiocarbamate), and tetramethylthiuram disulfide; organotin-type antifouling agents such as bis(triphenyltin) oxide, bis(tributyltin) oxide, tributyltin acetate, tributyltin chloride, triphenyltin hydroxide, triphenyltin versatate, and bis(tributyltin) alpha, and alpha'-dibromosuccinate; bacteriocides such as nitrile-type compounds, benzothiazol-type compounds, triazine-type compounds, urea-type compounds, isothiazoline-type compounds, maleimide-type compounds, N-haloalkylthio-type compounds, tetracycline-type compounds, pyridine- type compounds including zinc pyrithione and triphenylboron pyridinium salts; and zinc oxide.

The composition of D1 may further contain, if required, additives for paint such as a pigment, a plastisizer, and a solvent.(see abstract; page 2, line 33-34, page4, line 51 - page 5, line 18)

D2 shows that a polyhexamethyleneguanidine phosphate compound provides antimicrobial activity to various resins. The compound exhibits superior antimicrobial activity in a variety of resins without deleteriously affecting physical properties of resins and persists in antimicrobial activity for a long period of time in addition to being safe to the body.

(Continued on Supplemental Box.)

Supplemental Box
(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of:

5. Novelty (N):

None of all the documents D1-D2 disclose the same antifouling paint composition comprising; a resin; a solvent; polyhexamethyleneguanidine salt; a pigment; and cuprous oxide and/or zinc pyrithione according to the present invention claimed in claims 1-10.

Therefore the subject-matter of claims 1-10 is considered to be novel.(Article 33(2))

6. Inventive Step (IS):

As stated above, the antifouling paint composition of D1 is partially the same as that of the present invention claimed in claims 1-10 in that the antifouling paint composition of D1 contains a resin, a copper-type antifouling agent such as cuprous oxide, a generally known antifouling agent such as zinc pyrithione, and if required, additives for paint such as a pigment, a plastisizer, and a solvent.

However, D1 differs from the present invention claimed in claims 1-10 in that D1 does not show a polyhexamethyleneguanidine salt compound and the composition ratio as the technical feature of the present invention claimed in claims 1-10. In connection with the use of polyhexamethyleneguanidine salt compound, D2 just discloses that a polyhexamethyleneguanidine phosphate compound provide antimicrobial activity to various resins. Hence, none of all the documents teach or fairly suggest the antifouling paint composition which contains a polyhexamethyleneguanidine salt compound according to the present invention claimed in claims 1-10.

Accordingly, it is not considered to be obvious to a person skilled in the art to apply the knowledge of these documents, taken individually or in combination, for creating the antifouling paint composition according to the present invention.

Therefore, the present invention claimed in claims 1-10 is considered to involve an inventive step.(Article 33(3))

7. Industrial Applicability (IA):

The invention is considered to be industrially applicable.(Article 33(4))
